

SLOUGH SEDGE

Carex obnupta Bailey

plant symbol = CAOB3

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Abrams & Ferris (1960)

Alternate Names

Tall basket grass, sedge

Uses

Ethnobotanic: The leaves of *Carex obnupta*, are used for both wrapping and twining in the "grass" baskets that are well known and widely marketed by Nitinaht and Nootka women even today (Turner et al. 1983). "Grass" baskets are created using "three-cornered grass" (*Scirpus pungens*) for the basket bottom and ribs, slough sedge for the wrapping, and the top rim is made of the inner bark of western red cedar (*Thuja plicata*). The baskets usually have tightly fitting, convex lids of the same weave, and usually both basket and lid have designs of whales, birds, canoes,

or geometric patterns woven with dyed strands of twining materials.

The Nitinaht believed that picking "grasses" for baskets and mats (such as, *Carex obnupta* and *Scirpus pungens*) causes fog. The fisherman were always getting annoyed with the women who harvested these materials, because they were always making it foggy. It is said that Hesaquiat men shaved with this "grass" because the edges are so sharp. There is a saying in Hesaquiat which means "you're just like *citapt*, (*Carex obnupta*) you never change," because *citapt* is always the same and never seems to change in appearance.

Erosion Control: *Carex obnupta* provides erosion control and streambank stabilization. The dense swards of slough sedge provide sediment retention and nutrient uptake, thus contributing to water quality improvement. Emergent wetland plant communities dominated by slough sedge provide the following hydrologic functions:

- maintaining river or stream meander patterns;
- providing a broad, shallow plain where streamflow velocities slow and sediment deposition occurs;
- stormwater abatement;
- a mixing zone where brackish and freshwaters meet; and
- nutrient-rich habitat for aquatic organisms, fish, waterfowl, and predators such as otter, bald eagles, herons, and raccoons to feed.

Wildlife: The lens-shaped seeds of sedges are eaten by many kinds of wildlife. Birds known to eat sedge seeds include coots, ducks (such as wood ducks, canvasbacks, mallards, pintails, teal, shoveler), marsh birds and shorebirds (dowichers, rails, and sandpipers), upland gamebirds (grouse, pheasant, and wild turkey), and songbirds (house finch, junco, sparrow, and towhee). Waterfowl and ducks eat sedge seeds frequently in small to fair amounts. In addition to providing food for many wildlife species, sedges are also valuable for cover. Frequently they provide nesting cover for ducks, and their tufted growth furnishes concealment and bedding for other animals. Beavers, otters, muskrats and minks make their way through the sedges as they go to and from the water.

Invasive Potential: This plant is densely rhizomatous, and can be invasive in pastures or wet meadows.

Description

General: Sedge Family (Cyperaceae). Slough sedge is a robust sedge that grows 60-150 cm tall; this densely tufted, grasslike plant has stout, creeping rhizomes. The leaves are w-shaped, coarse, with the margins rolled under. The 4-8 cylindrical flower spikes are very large and long (5-12 cm) and loosely aggregated at the tip. *Carex lyngbyei* is a similar species.

Distribution

For current distribution, please consult the Plant Profile page for this species on the PLANTS Web site. Slough sedge is a coastal plant growing from San Luis County in California north through Oregon and Washington to British Columbia. Slough sedge occurs at elevations below 900 m.

Establishment

Adaptation: Slough sedge is an obligate wetland species that prefers fresh water. It grows in wet, shallow, inundated woods, meadows, roadside ditches, coastal swamps, lakeshores, bogs, marshes, and riverbanks. In muddy areas it can grow as a dense, single-species stand. It often grows in association with skunk cabbage (*Lysichiton americanum*). Slough sedge is very similar to Lyngbye's sedge in growth form and appearance. Both species tolerate brackish often saline coastal wetland areas; they often grow in similar habitats where saltwater and freshwater meet, such as at the mouths of rivers entering the Pacific Ocean, lagoons, or the Puget Sound.

General: *Carex obnupta* may be planted from bare root stock, seedlings from container stalk, or directly seeded into the soil. Bare root stock or seedlings are preferred revegetation methods, particularly in areas with moving water. Since slough sedge often grows in areas that are hydrologically quite dynamic, with both tidal and fluvial influences, bare root stock plantings are generally recommended. Seeds generally wash away in these conditions. Also, plants started from seeds tend to stay diminutive for over a year, with plant leaves remaining stunted and fragile for a considerable period of time.

Live Plant Collections: Live plant collections are appropriate only under a very limited set of conditions. Loss of wetland ecosystems exceeds 50% in most states and estuarine wetland losses have been as high as 90%. Public lands that allow plant collections, require permits. Permission from the landowner must be acquired to collect on private lands. No more than 1/4 of the plants in an area should be collected; a depth of 15 cm (6 in) is

sufficiently deep enough for digging plugs. This will leave enough plants and roots to grow back during the growing season.

Live transplants should be planted as soon as possible. Plants should be transported and stored in a cool location prior to planting. Plugs may be split into smaller units, generally no smaller than 6 x 6 cm (2.4 x 2.4 in) with healthy rhizomes and tops. Weeds in the plugs should be removed by hand. For ease in transport, soil may be washed gently from roots. The roots should always remain moist or in water until planted.

Clip leaves and stem from 15 to 25 cm (6 to 10 inches); this allows the plant to allocate more energy into root production and makes plants easier to handle (the leaves can be sharp). Planting densities of approximately 1 meter centers provide full coverage the first year (given good site conditions). If there is flowing water, increase planting densities to 1/2-meter centers. Plant densities should also be increased with fine soils such as clay or silt, steep slopes or prolonged inundation.

Ideally, plants should be planted in fall just after the first rains, depending on the climate and geographic location. This enables plant root systems to become established before heavy flooding and winter dormancy occurs. Planting survival is highest when plants are dormant, temperatures are cool, and soils are moist. Plants usually need to be planted by hand, as soils are too moist to use machines.

In some areas, winter storms and high tides would wash away newly transplanted seedlings. While in other areas, avoiding high tides and high floods is recommended, because this combination will minimize plant survival. Planting in the spring after high floods may be warranted in this situation.

Seed Germination

- Seeds usually have to be harvested by hand, as *Carex obnupta* Bailey grows in very wet habitats that are inaccessible by machine. *Carex obnupta* Bailey blooms from April to July. Collect seeds when they are ripe, from July to September. Make sure seed heads are full.
- Plant cleaned seeds in fall.
- Plant seeds in clean, weed free, moist seed bed.
- Broadcast seeds and roll in or rake 1/4" to 1/2" beneath the soil surface.
- Hold off watering so seeds doesn't float out.
- Some seeds may be lost due to scour or flooding.

- Use erosion control blankets to protect soil and seeds.
- Plants grown from seeds and planted from container stock have higher transplant survival than direct seeding.
- Recommended seed density is unknown at this time. Sedges tend to have low germination rates. While exact seeding prescriptions are unknown at this time, estimates of from 25% to 50% would be reasonable based on other *Carex* species.
- Nitrate fertilization greatly increases both biomass production and fecundity. Fertilizing plants at moderate nitrate levels increases flower stalk and seed production, seed weight, and seed viability.
- Increasing temperatures from 21°C to 32°C increases germination percentages.

Seed germination in greenhouse

- Clean seed - blow out light seeds.
- Put in water with sphagnum moss.
- Cold stratify seeds by putting in a cooler for 30 days to improve germination rates.
- To grow seeds, plant in greenhouse in 1" x 1" x 2" pots, 1/4" under the soil surface. Keep moist at 100 ° F (plus or minus 5 degrees). Sedges require high temperatures and constant moisture for successful germination. Seeds begin to germinate after two weeks in warm temperatures.
- Plants are ready in 100 - 120 days to come out as plugs. These plants are very small; for planting, larger plugs in spring will improve revegetation success.

Management

The leaves of slough sedge are cut in late summer (August) (Turner et al. 1983). A knife was used to cut the plant at the base, as low to the ground as possible. The best plants were said to be those growing in 10 cm (4") of water. The cluster of leaves are cut off or pulled from the tender white bases, where they break off at or just below the ground level. Only the non-flowering, vegetative plants, called the "female" plants, were gathered.

The harvested sedge leaves are bundled and taken home, where they are sorted according to size; the longest ones, considered the best, were put together and dried. After the leaves have dried slightly, they are split exactly in half lengthwise, from bottom to top, using the thumbnail. After being split, the leaves are dried completely and bleached in the sun. They can then be bundled or stored.

Traditional Resource Management: Conservation practices include the following: 1) gathering only during late summer after seeds are produced; 2) gathering only infertile shoots without flowering stalks; 3) weeding out competing species and removing impediments to growth such as stones and branches; 4) pruning shoots causes sedges to retranslocate nutrients belowground, providing a nutrient reserve to stimulate new growth the following growing season; 5) removal of long, dense shoots provides good opportunities for seedling establishment and recruitment; 6) harvesting aboveground biomass maintains the sedge clone in juvenile and mature life stages, removing decadent old portions of plants and stimulating new growth; and 7) ownership of sedge beds provides the basis for careful tending and sustainable yield of valued resources.

Cultivars, Improved and Selected Materials (and area of origin)

CAOB3 is readily available through native plant nurseries and seed companies within its range. Please check the Vendor Database, expected to be on-line through the PLANTS Web site in 2001 by clicking on Plant Materials.

References

Abrams, L. & R.S. Ferris 1960. *Illustrated flora of the Pacific states*. 4 Vols. Stanford University Press, Palo Alto, California.

Baskin, C.C., E.W. Chester, & J.M. Baskin 1996. *Effect of flooding on annual dormancy cycles in buried seed of two wetland Carex species*. *Wetlands* 16(1): 84-88.

Baskin, J.M. & C.C. Baskin 1978. *Seasonal changes in the germination response of Cyperus inflexus seeds to temperature and their ecological significance*. *Bot. Gaz.* 139 (2): 231-235.

Baskin, J.M. and C.C. Baskin 1971. *Germination of Cyperus inflexus seeds*. *Bot. Gaz.* 132(1):3-9.

Bernard, J.M. 1989. *Life history and reproduction in Carex*. *Can. J. Bot.* 68:1441-1448.

Cooke, S.S. 1997. *A field guide to the common wetland plants of western Washington and northwestern Oregon*. Seattle Audubon Society and Washington Native Plant Society. 414 pp.

Gunther, E. 1945 rev. 1973. *Ethnobotany of western Washington*. University of Washington Publications

in Anthropology, 10(1). University of Washington Press, Seattle, Washington

Grime, J.P., G. Mason, A.V. Curtis, J. Rodman, S.R. Band, M.A.G. Mowforth, A.M. Neal & S. Shaw 1981. *A comparative study of germination characteristics in a local flora*. Journal of Ecology 69:1017-1059.

Harper, J.L., J.T. Williams and G.R. Sagar 1964. *The behavior of soil surfaces and its role in determining the establishment of plants from seed*. Journal of Ecology 53:273-286.

Hickman, J.C. (ed.) 1993. *The Jepson manual. Higher plants of California*. University of California Press. 1399 pp.

Hoag, J.C. & M.E. Sellers 1995. *Use of greenhouse propagated wetland plants versus live transplants to vegetate constructed or created wetlands*. Interagency Riparian/Wetland Plant Development Project, USDA, NRCS, Plant Materials Center, Aberdeen, Idaho.

Hoag, J.C. & M.E. Sellers 1994. *Seed and live transplant collection procedures for 7 wetland plant species*. Interagency Riparian/Wetland Plant Development Project, USDA, NRCS, Plant Materials Center, Aberdeen, Idaho.

Keddy, P.A. & P. Constabel 1986. *Germination of ten shoreline plants in relation to seed size, soil particle size and water level: an experimental study*. Journal of Ecology 74:133-141.

Martin, A.C., H.S. Zim, & A.L. Nelson 1951. *American wildlife and plants. A guide to wildlife food habits*. Dover Publications, Inc., New York, New York. 500 pp.

Mason, H.L. 1957. *A flora of the marshes of California*. University of California Press. Berkeley and Los Angeles, California. 878 pp.

Moser, C.L. 1993. *Native American basketry of southern California*. Riverside Museum Press. 155 pp.

Stevens, M.L. 1999. *The effect of nitrogen fertilization on the growth, reproduction, and nitrogen use efficiency of Carex barbarae*. Ph.D. Dissertation, third paper. University of California, Davis, California. In progress.

Schütz, W. 1998. *Seed dormancy cycles and germination phenologies in sedges (Carex) from various habitats*. Wetlands 18(2):288-297.

Thompson, K. & J.P. Grime 1983. *A comparative study of germination responses to diurnally fluctuating temperatures*. Journal of applied ecology 20:141-156.

Thompson, K. & J.P. Grime 1979. *Seasonal variation in the seed banks of herbaceous species in ten contrasting habitats*. Journal of Ecology 67:893-921.

Turner, N.J., J. Thomas, B.F. Carlson, & R.T. Ogilvie 1983. *Ethnobotany of the Nitinaht Indians of Vancouver Island*. Occasional Papers of the British Columbia Provincial Museum No. 24. Province of British Columbia. Ministry of Provincial Secretary and Government Service. Government of Canada. Parks Canada Western Region.

Turner, N.J. 1982. *Ethnobotany of the Hesquiat Indians of Vancouver Island*. Cultural Recovery Paper No. 2. British Columbia Provincial Museum. Province of British Columbia. Ministry of Provincial Secretary and Government Services.

Urbaniak, L. 1993. *Variability characteristics and comparison of Carex arenaria L. and Carex ligerica Gray populations based on rhizome characters*. Acta Societatis Botanicorum Poloniae. 63(1):77-81.

USDA, NRCS 1999. *The PLANTS database*. National Plant Data Center, Baton Rouge, Louisiana. <<http://plants.usda.gov>>. Version: 990412.

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